

Binomial Denominators (Conjugate)

a)  $\frac{9}{(\sqrt{11}-\sqrt{8}) \times (\sqrt{11}+\sqrt{8})}$   
 $= \frac{9\sqrt{11} + 9\sqrt{8}}{11-8}$   
 $= \frac{9\sqrt{11} + 18\sqrt{2}}{3} = 3\sqrt{11} + 6\sqrt{2}$

b)  $\frac{(\sqrt{7}-\sqrt{3}) \times (\sqrt{5}-\sqrt{3})}{(\sqrt{5}+\sqrt{3}) \times (\sqrt{5}-\sqrt{3})}$   
 $= \frac{\sqrt{35} - \sqrt{21} - \sqrt{15} + 3}{5-3}$   
 $= \frac{\sqrt{35} - \sqrt{21} - \sqrt{15} + 3}{2}$

c)  $\frac{(2\sqrt{2}+3) \times (4\sqrt{2}+5)}{(4\sqrt{2}-5) \times (4\sqrt{2}+5)}$   
 $= \frac{8\sqrt{4} + 10\sqrt{2} + 12\sqrt{2} + 15}{16\sqrt{4} - 25}$   
 $= \frac{16 + 22\sqrt{2} + 15}{32 - 25}$   
 $= \frac{31 + 22\sqrt{2}}{7}$

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What is a Conjugate?

$\sqrt{11} - \sqrt{8}$	$\sqrt{11} + \sqrt{8}$
original	conjugate
$-2\sqrt{3} + 7\sqrt{6}$	$2\sqrt{3} - 7\sqrt{6}$
	$-2\sqrt{3} - 7\sqrt{6}$
	$2\sqrt{3} - -7\sqrt{6}$

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Common Denominators

a)  $\frac{\sqrt{3} \times 1}{\sqrt{3} \times \sqrt{2}} - \frac{1}{\sqrt{6}}$

$$= \frac{\sqrt{3}}{\sqrt{6}} - \frac{1}{\sqrt{6}}$$

$$= \frac{\sqrt{3} - 1}{\sqrt{6}}$$

$\Rightarrow \frac{\sqrt{3} - 1}{\sqrt{3} \times \sqrt{2}} \times \frac{\sqrt{6}}{\sqrt{6}}$

$$= \frac{\sqrt{3} \cdot \sqrt{6} - \sqrt{2} \cdot \sqrt{6}}{\sqrt{6} \cdot \sqrt{6}}$$

$$= \frac{\sqrt{18} - \sqrt{12}}{6}$$

$$= \frac{3\sqrt{2} - \sqrt{6}}{6}$$

b)  $\frac{\sqrt{5} \times 2}{\sqrt{5} \times \sqrt{7}} - \frac{3 \times \sqrt{7}}{\sqrt{5} \times \sqrt{7}}$

$$= \frac{2\sqrt{5}}{\sqrt{35}} - \frac{3\sqrt{7}}{\sqrt{35}}$$

$$= \frac{2\sqrt{5} - 3\sqrt{7}}{\sqrt{35}}$$

$\Rightarrow \frac{2\sqrt{5} - 3\sqrt{7}}{\sqrt{5} \times \sqrt{7}} \times \frac{\sqrt{35}}{\sqrt{35}}$

$$= \frac{2\sqrt{5} \cdot \sqrt{35} - 3\sqrt{7} \cdot \sqrt{35}}{\sqrt{35} \cdot \sqrt{35}}$$

$$= \frac{2\sqrt{175} - 3\sqrt{245}}{35}$$

$$= \frac{10\sqrt{7} - 21\sqrt{5}}{35}$$

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**Assignment: Pg. 139**  
**14,15, 17**  
**ALL Odds**

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